WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2005OR73B

Title: Development of a web-based database of hydrologic data for the Upper Oak Creek Watershed

Project Type: Research

Focus Categories: Hydrology, Education

Keywords: Forestry, Hydrology, Watershed

Start Date: 07/01/2005

End Date: 06/30/2006

Federal Funds: $14,405

Non-Federal Matching Funds: $29,018

Congressional District: Oregon

Principal Investigator:
Arne Edward Skaugset III

Abstract

Oregon State University is one of the leading research Universities in water resources in the United States. Evidence of this fact is the brand new graduate degree program in Water Resources. While research sites for the scientists involved in water resources research at Oregon State University certainly span the state, the nation, and a substantial number of international sites, a diamond in the rough for water resources research Oregon State is the Oak Creek watershed. The Oak Creek watershed represents a tremendous potential asset to Oregon State water resources as a potential research site but also, and potentially more importantly, as a teaching resource. Oregon State University resides within the Oak Creek watershed. The watershed can be divided roughly into thirds with dominate land uses that are forestry, agriculture, and urban, which allow a variety of land in the form of a dairy farm and the upper forested third of the watershed is part of the McDonald/Dunn Research Forest, the school forest for the College of Forestry.

The portion of the Oak Creek Watershed in the MacDonald/Dunn research forest has often been used for research during the past decades. Most notably Drs. Klingleman and Beschta carried out some landmark research on bedload transport in Oak Creek in the late 1960's and early 1970's. Currently, we are involved in a research project to investigate

the hydrology and sediment yield of individual road segments in forested watersheds, how these road segments aggregate to affect the hydrology of roaded watersheds, and how chronic sediment inputs from individual road segments is route din a forested watershed. As a result, a lot of hydrologic research infrastructure has been installed in the forested portion of the Oak Creek watershed. Most notably, for the past three winters water level data has been collected and runoff data has been calculated for each of the 98 culverts on every road in the forested portion of Oak Creek. In addition to the runoff data from the culverts on the roads, discharge and sediment yield has been measured at the boundary of the school forest, precipitation has been measured at four rain gages throughout the watershed, and meteorological data has been collected at a weather station in the watershed.

The collection of hydrologic data for the forested portion of the Oak Creek watershed is currently being supported by dedicated research funds. Because of this the data is available to the research group carrying out the research projects in Oak Creek, but is not generally available to the University hydrology community. The objectives of this project are to 1) establish a database (available on the internet) that provides the OSU hydrology research and teaching community, as well as the public, with access to the non-proprietary data collected in the forested portion of the Oak Creek watershed beginning in 2001 through the present. Data will include discharge at the forest boundary, precipitation, and climate data; 2) Add proprietary data including runoff data from all culverts and sediment yield data from road segments and the forest boundary to the database when it is published; and 3) Consolidate and make publicly available in electronic format the historical data from Oak Creek that was collected by Drs. Klingeman and Beschta. This project will support teaching and research in Oak Creek by providing hydrologic data to the public.